

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
ON APPEAL FROM THE EXAMINER TO THE BOARD  
OF PATENT APPEALS AND INTERFERENCES**

In re Application of: David G. Way  
Serial No: 10/041,853  
Date Filed: January 7, 2002  
Group Art Unit: 2613  
Examiner: Nathan M. Curs  
Confirmation No. 5513  
Title: SELECTABLE DISPERSION ENHANCEMENT

**Mail Stop Appeal Brief - Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**REPLY BRIEF**

Appellant has appealed to this Board from the decision of the Examiner, contained in a Final Office Action mailed May 11, 2006 ("*Final Office Action*") and the Advisory Action mailed July 28, 2006 ("*Advisory Action*"), finally rejecting Claims 1-9 and 11-20. Appellant filed a Notice of Appeal on August 10, 2006. Appellant submitted an Appeal Brief on October 10, 2006 ("*Appeal Brief*"). The Examiner responded in an Examiner's Answer mailed January 5, 2007 ("*Examiner's Answer*"). Appellant respectfully submits this Reply Brief for consideration of the Board.

**ARGUMENT**

**A. Claims 1-9, 11, 13-17, 19, and 20 are patentable. (Section A of the Appeal Brief)**

The Examiner's rejection of Claims 1-9, 11, 13-17, 19, and 20 based upon the proposed *Colbourne-Delavaux-Keys* combination must fail for any of the following reasons:

- *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest each and every element of the claims. (*See Appeal Brief* at section A.1).
- The combination is improper because there is no suggestion or motivation to modify or combine *Colbourne*, *Delavaux*, and *Keys*. (*See Appeal Brief* at section A.2).
- *Colbourne* teaches away from Appellant's claims, and, thus, its use under § 103 is improper. (*See Appeal Brief* at section A.2.a).
- *Delavaux* and *Keys* teach away from a combination with each other and, thus, their combination under § 103 is improper. (*See Appeal Brief* at section A.2.b).

In the Appeal Brief, Appellant fully explained each of these arguments for patentability. In the sub-sections that follow, Appellant simply refutes the arguments presented by the Examiner in the *Examiner's Answer*.

**1. *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest each and every element of the claims. (*Appeal Brief*, Section A.1)**

Using Claim 1 as an example, the proposed *Colbourne-Delavaux-Keys* combination fails to teach or suggest a dispersion enhancement module (DEM) operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts.

The Examiner responds to the Appeal Brief with basically two arguments. First, the Examiner disputes Appellant's characterization of *Delavaux* and asserts that *Delavaux* fails to specify whether *Delavaux*'s dispersion compensation fibers are negative or positive. Second, the Examiner argues that because *Keys* teaches dispersion enhancement fibers, the

references, when taken together, teach all limitations of the claim. Appellant respectfully disagrees.

Attempting to dispute Appellant's characterization of *Delavaux*, the Examiner claims that Appellant's citation is "from the background section of *Delavaux*, referring to what *Delavaux* considers prior art." *Examiner's Answer*, p. 14. This is plainly incorrect. *See Appeal Brief*, p. 13. Appellant (in the *Appeal Brief* and now) points to the *Delavaux*'s Detailed Description, which states that the dispersion compensation unit 9 "introduces an amount of dispersion that compensates for the dispersion in [system optical] fibers 11 and 13." *Delavaux*, col. 2, l. 64 - col. 3, l. 2; *id.* at Figure 1. In the Background, *Delavaux* more clearly explains the meaning of "compensat[ing]" for dispersion -- dispersion compensating fiber (DCF) has a negative dispersion relative to a system fiber. *Id.*, col. 1, ll. 35-38. Accordingly, *Delavaux* directly refutes the Examiner's later assertion (*see Examiner's Answer*, p. 14) that *Delavaux* "does not disclose whether *Delavaux*'s specific dispersion compensation fibers are negative or positive in dispersion value." *See Examiner's Answer*, p. 14; *Delavaux*, col. 2, l. 64 - col. 3, l. 2; *id.* at Figure 1.

While the cited portion of *Delavaux* teaches dispersion compensating fiber with a negative dispersion relative to a system fiber, Claim 1 requires a dispersion enhancement module operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber. Thus, *Delavaux* fails to teach or suggest these claimed aspects.

The Examiner then argues that *Keys* teaches the use of dispersion enhancement fibers, and that this mere use is sufficient, when combined with the other references, to teach the claimed dispersion enhancement module. *Examiner's Answer*, pp. 14-15. Appellant acknowledges that *Keys* discloses that "[s]ome of the [dispersion compensated fiber] segments have a positive dispersion." *Keys*, col. 1, ll. 59-60. But, rather than teaching a "a plurality of dispersion enhancement fibers" that may be used to "increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts" (as required by Claim 1), *Keys* teaches that these positive and negative segments are combined in order "to offset the dispersion associated with the transmission optical fiber." *Keys*, col. 1, ll. 59-63. Accordingly, while positive segments of dispersion compensation fiber may exist, *Keys* teaches away from combining a plurality of these positive segments in a dispersion enhancement module (DEM). Further, *Keys* certainly fails to teach or suggest combining

positive segments in a DEM operable to increase the positive dispersion by a selected one of a plurality of amounts.

As explained fully in the *Appeal Brief*, *Colbourne* fails to remedy the deficiencies of *Delavaux* and *Keys*, which the Examiner does not refute. *See Examiner's Answer*, p. 13-15 (not discussing the teachings of *Colbourne*). Accordingly, Appellant respectfully submits that *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest a "DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts," as required by Claim 1.

**2. There is no suggestion or motivation to modify or combine *Colbourne*, *Delavaux*, and *Keys*. (*Appeal Brief*, Section A.2)**

The proposed combination is improper, as there is no teaching, suggestion, or motivation to combine or modify the teachings of the cited references either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In response to Appellant's arguments, the Examiner merely quibbles with Appellant's quote from *In re Dembiczak*, which, restated, is: "Evidence of a suggestion, teaching, or motivation . . . may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, the nature of the problem to be solved." *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). However, the "range of sources available . . . does not diminish the requirement for actual evidence." *Id.* (emphasis added).

In the present case, the Examiner has not cited any evidence of a teaching, suggestion, or motivation to combine or modify the teachings of *Colbourne*, *Delavaux*, and *Keys*. Instead, the Examiner simply states that the teachings of one reference might be combined with the teachings of another reference. With regard to independent Claim 1, the Examiner states:

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the variable dispersion compensation devices of *Delavaux et al.* for the variable compensators of *Colbourne et al.* since dispersion compensation fiber is convention and since the etalons of *Colbourne* require dimensions and free spectral range that are dependent on channel spacing of a multi-wavelength signal. *Keys* discloses tailoring dispersion compensating modules for specific compensation values by using various segments of DCF,

including positive and negative dispersion segments (col. 1, line 57 to col. 2, line 11). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a set of positive dispersion segments and a set of negative dispersion segments in each of the DCF-based dispersion compensation devices of the combination of Colbourne et al. and Delavaux et al., in order to be able to use the same dispersion compensation device for spans of varying length and fiber types, by connecting the appropriate segments of DCF within the device (negative, positive, or both), as taught by Keys.

*Final Office Action*, p. 3. Appellant respectfully submits that this statement does not provide the required evidence of a teaching, suggestion, or motivation to combine or modify the references. (The cited portion of *Keys* merely purports to support the Examiner's characterization of *Keys*.)

First, Appellant submits that the Examiner's "motivation" for obviousness amounts to identifying ingredients from three different references and arguing that the specific recipe claimed by Appellant is obvious simply because it includes those three ingredients. Appellant submits that this fails to establish *prima facie* obviousness.

Second, Appellant submits that the Examiner fails to explain why one would be motivated to make the combination. The Examiner states that it would have been obvious to combine the references in this particular way "in order to be able to use the same dispersion compensation device for spans of varying length and fiber types." *Id.* However, these three references already provide for this adjustable dispersion compensation.<sup>1</sup> Accordingly, the Examiner fails to explain the alleged motivation of one of ordinary skill in the art for combining these references in the way claimed by Appellant. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

Third, the Examiner provides no objective evidence for these assertions. The above statement represents the subjective belief of the Examiner, does not point to any known authority, and therefore is not based on objective evidence of record. It appears that the Examiner has simply attempted to propose advantages of combining *Colbourne*, *Delavaux*,

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<sup>1</sup> See *Colbourne*, Abstract ("By providing [the techniques of this invention], a controllable amount of dispersion can be introduced to offset or compensate dispersion."); *Delavaux*, Abstract ("The amount of dispersion introduced by the dispersion compensating fibers is varied depending upon the amount of compensation required."); *Keys*, Abstract ("As a result, spools of DCF can be readily coupled to one another to provide a desired amount of dispersion compensation.").

and *Keys*. It is not sufficient to propose a modification or combination based on the mere possibility that the modification might improve the references. Moreover, the advantages provided by the Examiner do not provide an explanation as to: (1) why it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention (without using Appellant's claims as a guide) to modify the particular techniques disclosed in *Colbourne* with the cited disclosures in *Delavaux* and *Keys*; (2) how one of ordinary skill in the art at the time of Appellant's invention would have actually done so; and (3) how doing so would purportedly meet the limitations of the claims.

**3. The rejection under § 103 is improper because the cited references teach away from either the claims or other cited references. (Section A.2.a & A.2.b of the Appeal Brief)**

- a. *Colbourne* teaches away from the proposed combination, and, thus, the use of *Colbourne* under § 103 is improper.

*Colbourne* expressly teaches away from the use of dispersion compensation fibers, as required by Claim 1. *Colbourne* proposes the use of optical filters and discourages the use of dispersion compensation fibers. *Colbourne*, Abstract; *id.* at col. 8, l. 61 - col. 9, l. 16.

The Examiner responds by asserting that “*Colbourne* teaches use of dispersion compensation fibers.” *Examiner's Answer*, p. 16 (citing *Colbourne*, col. 9, ll. 12-14). However, a quick look at the cited portion of the reference reveals that *Colbourne* states that, while dispersion compensation fibers may exist, they do not provide all of the advantages of *Colbourne's* invention (specifically because dispersion compensation fibers cannot compensate for the wavelength dependence of dispersion). *Colbourne*, col. 9, ll. 12-14; *see Appeal Brief*, pp. 16-17.

The Examiner then argues that a different passage of *Colbourne* “expressly uses dispersion compensation fibers along with *Colbourne's* optical filter.” *Examiner's Answer*, p. 16 (citing *Colbourne*, col. 11, ll. 3-22). *Colbourne*, while describing Figure 11, acknowledges that the optical signal may pass through a dispersion compensating fiber before being directed to *Colbourne's* tunable dispersion compensator 220. *Colbourne* never teaches, suggests, or encourages (in this passage or any other) the use of dispersion compensation fibers in the tunable dispersion compensator. However, the Examiner's obviousness case depends upon employing dispersion compensation fibers (rather than

optical filters) in *Colbourne's* tunable dispersion compensator. The disclosure of dispersion compensation fiber elsewhere fails to negate *Colbourne's* discouragement of using those fibers in the tunable dispersion compensator. Thus, *Colbourne's* disclosure teaches away from Appellant's claims because, after reading *Colbourne*, a person of ordinary skill would be led away from the path taken by Appellant.

- b. *Delavaux* and *Keys* teach away from a combination with each other, and, thus, the combination of *Delavaux* and *Keys* under § 103 is improper.

*Delavaux* and *Keys* teach alternate techniques for accomplishing a similar end result. One of skill in the art would not be motivated to pick and choose different aspects of these two alternates, but rather would be inclined to select only one of the two.

*Delavaux* teaches one way of compensating for dispersion -- adjustable dispersion compensating fibers are used in a dispersion compensation unit. *Delavaux*, Abstract; *id.* at col. 2, ll. 64 - col. 3, l. 2. *Keys* discloses an alternative way of compensating for dispersion -- *Keys* connects one or more spools of dispersion compensating fiber. *Keys*, Abstract; *id.* at col. 1, ll. 31-37. The Examiner still fails to provide a compelling explanation of why (and evidence that) one of ordinary skill in the art would be motivated to combine the alternative techniques of *Delavaux* and *Keys*.

In response to Appellant's arguments, the Examiner asserts that *Delavaux* and *Keys* do not teach alternative techniques because "Keys provides unique information in the combination." *Examiner's Answer*, p. 15. Whether or not *Keys* provides unique information is irrelevant. *Delavaux* and *Keys* may teach alternative techniques that encourage one of skill in the art to select between their teachings, and simultaneously "provide unique information" from the other. In fact, it seems likely that each alternative technique would disclose information unique from the other alternative technique. Accordingly, Appellant respectfully submits that the Examiner's argument is unpersuasive.

For at least this reason, the proposed *Colbourne-Delavaux-Keys* combination is improper. Accordingly, Appellant respectfully requests the Board to reverse the Examiner's rejection of Claims 1-9, 11, 13-17, 19, and 20 and direct the Examiner to issue a notice of allowance.

**CONCLUSION**

Appellant has demonstrated that the present invention, as claimed in Claims 1-9 and 11-20, is patentably distinct from the cited art. Accordingly, Appellant respectfully requests that the Board reverse the final rejection and instruct the Examiner to issue a Notice of Allowance of Claims 1-9 and 11-20.

Although Appellant believes no fees are due, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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